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10/823,330	04/12/2004	Tadashi Ohira	CFA00079US	4472

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EXAMINER	
YEH, EUENG NAN	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/823,330	OHIRA, TADASHI	
	Examiner	Art Unit	
	EUENG-NAN YEH	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-12,19 and 22* is/are pending in the application.

4a) Of the above claim(s) *11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-10, 12, 19, 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FINAL ACTION

Response to Amendment

1. The following Office Action is responsive to the amendment and remarks received on September 2, 2008. Claim 11 canceled and claims 7-10, 12, 19, and 22 remain pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 7-10, 12, 19, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Hannuksela et al. (US 2001/0040700 A1), Klein Gunnewiel et al. (US 2003/0086622 A1), and Lee (US 2003/0156198 A1).

Regarding claims 7 (apparatus), 19 (method), and 22 (computer-readable medium), Hannuksela discloses a data process system comprising:

a) input means for inputting image data (as depicted in figure 3, numeral 101 “an input 101 for receiving a video signal from a camera or video source (not shown) of the terminal 1” in paragraph 46, line 3);

b) first coding means for coding the input image data by transforming the input image data into frequency components in units of blocks and coding said frequency

components by adaptively using an intracoding mode and an interceding mode ("Block layer data consist of uniformly quantised discrete cosine transform coefficients, which are scanned in zigzag order, processed with a run-length encoder and coded with variable length codes. MPEG-2 and MPEG-4 layer hierarchies resemble the one in H.263" in paragraph 15, line 1. As depicted in figure 3, numerals 102, 103, and 104 "A switch 102 switches the encoder between an INTRA-mode of coding and an INTER-mode. The encoder part 100 of the video codec 10 comprises a DCT transformer 103, a quantiser 104 …" in paragraph 46, line 4);

e) multiplexing means for outputting combined data obtained by combining the pseudo-coded reference data with the image data coded by said first coding means (as depicted in figure 2, numeral 50 "encoded video data is then output to the multiplexer 50. The multiplexer 50 multiplexes the video data from the video codec 10 and control data from the control 40 (as well as other signals as appropriate) into a multimedia signal. The terminal 1 outputs this multimedia signal to the receiving terminal 2 …" in paragraph 48, line 6. Thus, one input to the multiplexer can be the pseudo-coded reference data and the other input to the multiplexer can be the image data coded by said first coding means. "The video codec outputs the quantised DCT coefficients 112a *(figure 3)*, the quantising index 112b … the motion vectors 112e for the picture being coded. These are multiplexed together with other multimedia signals by the multiplexer 50" in paragraph 53, line 1.

System with multi layers is used: "Scalable multimedia is typically ordered so that there are hierarchical layers of data. A base layer contains a basic representation of the

multimedia clip whereas enhancement layers contain refinement data on top of underlying layers. Consequently, the enhancement layers improve the quality of the clip. Scalability is a desirable property for heterogeneous and error prone environments. This property is desirable in order to counter limitations such as constraints on bit rate, display resolution, network throughput, and decoder complexity. Scalability can be used to improve error resilience in a transport system …" in paragraph 122, line 1. As depicted in figure 11 with base layer and enhancement layer, the spatially scalable structure "allows for the creation of multi-resolution bit streams to meet varying display requirements and/or constraints" in paragraph 128, line 1. Thus, the multiplexer will output the combination of hierarchical layers of data.)

Hannuksela does not explicitly disclose a decoded means for the enhanced data and the switching means for the interceding mode. Furthermore, Hannuksela does not explicitly teach the frequency limitation.

Klein Gunnewiek, in the same field of endeavor of video encoder ("particularly to a video encoder which uses efficient spatial scalable compression" in paragraph 1, line 2), teaches an scalable enhancement codec as depicted in figure 3, numeral 314 based on local decoding #338 (inverse quantization), #340 (inverse DCT), and #348 on the input image data coded by first coding means such as #330 (DCT) and # 332 (Q) or first coding means from Hannuksela figure 3 #103 (DCT) and #104 (Q) to obtain the reconstructed image data then perform second coding such as #368 (DCT) and #370 (Q) under the bitrate controller #374. As depicted in Klein Gunnewiek figure 3, numeral

366 is the switching to output enhancement data, i.e. pseudo-coded reference data, for the P-frame or B-frame, i.e. interceding mode, processing.

It would have been obvious at the time the invention was made to one of ordinary skill in the art would have been motivated to provide the data processing system Hannuksela made with bitrate controlled scalable enhancement technique as taught by Klein Gunnewiek, not only it "can be used to improve error resilience in a transport system" in Hannuksela paragraph 124, line 1, but also "providing more efficient spatial scalable compression schemes which reduces the necessary bitrate of the encoder" in Klein Gunnewiek paragraph 9, line 3.

The Hannuksela and Klein Gunnewiek combination does not explicitly teach the frequency limitation.

Lee, in the same field of endeavor of video coding ("particularly, to a stream-based bitrate transcoder for MPEG bitstreams" in paragraph 3, line 2), teaches the importance of bitrate control "[b]itrate transcoding is a very powerful tool to adapt the dynamic bitrate changes in networked multimedia applications, especially in a heterogeneous networks environment" in paragraph 5, line 1. And "bitrate controller is used to overcome two potential problems with (1) reducing too many bits for dropping too many coefficients and (2) too few coefficients being dropped. A simple TM5 rate control is used to deal with these problems. It should be noted that the coefficient dropping starts with the non-zero high frequency coefficients towards the low frequency ones and DC coefficients are never selected for dropping" in paragraph 43, line 3.

Thus, the bitrate controller can be used to limiting DCT frequency components during data processing.

It would have been obvious at the time the invention was made to one of ordinary skill in the art would have been motivated to include the said data processing system of the Hannuksela and Klein Gunnewiek combination, with limited DCT frequency components as taught by Lee, not only this method can be "quickly adaptive to the dynamic changes of bitrate requirements for bandwidth-limited networked multimedia applications" in paragraph 44, line 7, but also a "consistent video quality may be maintained to some extent" in paragraph 23, line 9.

Regarding claim 8, pseudo-coded reference data generating means performs coding on only direct-current components obtained by limiting said frequency components (as discussed in claim 7, "…and DC coefficients are never selected for dropping" in Lee paragraph 43, line 9. Thus, the Hannuksela, Klein Gunnewiek, and Lee combination teaches that other coefficients can be dropped and the DC components can be the only frequency components used).

Regarding claim 9, first coding means and said pseudo-coded reference data generating means use an MPEG-4 standard to code the image data ("The invention may be implemented in other video coding protocols. For example MPEG-4 defines so-called user data, which can contain any binary data and is not necessarily associated with a picture. The additional field may be added to these fields" in Hannuksela

paragraph 136, line 1. See also "Most video compression standards support spatial scalability. FIG. 1 illustrates a block diagram of an encoder 100 which supports MPEG-2/MPEG-4 spatial scalability" in Klein Gunnewiek paragraph 5, line 1).

Regarding claim 10, said multiplexing means locates the pseudo-coded reference data in a user data area in a video plane object in a stream of the combined data output by said multiplexing means (as depicted in Hannuksela figure 7 "shown in FIG. 7, the bit stream includes a further codeword SRPN which is a codeword indicating the Spare Reference Picture Number … Alternatively, the SRPN may be included in the Supplemental Enhancement Information PSUPP …" in paragraph 109, line 4. Figures 8 and 9 show examples of a bit stream output by an encoder with the enhancement data. Further discussion about the coding of additional enhancement information can be found in paragraphs 114 and 115).

Regarding claim 12, the pseudo-coded reference data is used as a reference image when the image data coded in the intercoding mode by said first coding means is decoded (discussed in claim 7 which shows the importance of the enhanced layer in the scalable system: ".. Consequently, the enhancement layers improve the quality of the clip … Scalability can be used to improve error resilience in a transport system …" in Hannuksela paragraph 122, line 5. Thus, during decoding the first coded means data process the second coded means data is used as a reference image to improve quality and avoid error).

Response to Arguments

a) Summary of Applicant's Remark:

"In the outstanding Office Action, the Examiner alleges that the multiplexer of the scalable multimedia system will multiplex together enhanced coding data with base coding data. However, it is obvious that the enhanced data cannot be decoded correctly if the frequency components of the base data are limited in the scalable multimedia system" at response page 14, line 24.

Examiner's Response:

As disclosed by Lee, limiting frequency components to reduce bitrate, teaches "… the first component is to proportionally distribute the reduced bitrate to pictures based on their coding complexity, and then a consistent video quality may be maintained to some extent …" in Lee paragraph 23, line 6. Thus, lee suggests maintaining a consistent video quality with bitrate control. Furthermore, Klein Gunnewiek, "… [a]s a result, the motion estimation is performed on the upscaled base layer plus the enhancement layer instead of the residual difference between the original high-resolution stream and the reconstructed high-resolution stream. This motion estimation produces motion vectors that track the actual motion better than the vectors produced by the known systems of FIGS. 1 and 2. This leads to a perceptually better

picture quality …" in paragraph 33, line 8. Thus, Klein Gunnewiek suggests the reconstructed data can lead to a perceptually better picture quality.

b) Summary of Applicant's Remark:

"Hannuksela, Klein Gunnewiek, and Lee references do not teach or suggest the switching means for outputting the pseudo-coded reference data generated by the pseudo-coded reference data generating means when coding process is performed in the intercoding mode" at response page 15, line 1.

Examiner's Response:

As depicted in Klein Gunnewiek figure 3, the switch 366 will output P-frame or B-frame pseudo-coded reference data. Refer to the rejections above.

Conclusion

4. Applicant's amendment is rejected in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eueng-nan Yeh whose telephone number is 571-270-1586. The examiner can normally be reached on Monday-Friday 8AM-4:30PM EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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